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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,484	10/31/2003	Sun-Ho Kang	051583-0289	3154
27433	7590	06/06/2006	EXAMINER	
FOLEY & LARDNER LLP 321 NORTH CLARK STREET SUITE 2800 CHICAGO, IL 60610-4764			CANTELMO, GREGG	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 06/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/699,484

Applicant(s)

KANG ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/31/03 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/22/05</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Priority

1. Applicant's claim to U.S. Provisional Application Serial No. 60/423,347 is acknowledged.

Information Disclosure Statement

2. The information disclosure statement filed February 22, 2005 has been placed in the application file and the information referred to therein has been considered as to the merits.

Drawings

3. The drawings are objected to because the images of Figs. 1a-2c are not clear. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

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applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. Claim 2 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. While claim 2 defines X as being the element of F, the range for F still encompasses 0. Thus when z of claim 2 is 0, there is no F present and thus the product of claim 2 would be identical to that of claim 1, thus for that portion of the range, claim 2 would fail to further limit claim 1.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14 and 16-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "about" in claims 1-20 is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The specification does not reasonably disclose what the claimed phrase of "about" defines and thus the particular ranges of the claims are indefinite since the bounds of these ranges are not

clear due to the ambiguous term of "about". Furthermore the value of "between about 0" is indefinite since it is unclear as to whether or not these ranges require or do not require the presence of such additives given that "about 0" may include 0 itself or in fact negative values. Also considering the breadth of the ranges reciting, first about 0, and thereafter about 0.1, the phrase about 0.1 may still encompass 0 since it is apparent that about 0 is the broadest range appreciated by the claim and thus about 0.1 could still read on 0.

6. Claim 15 is indefinite. The controlling of the various variables within the claims are vague and it is unclear as to what elements would be present in the claimed combination as to what extents. Further, given the fact that some of the elements in the overall generic formula need not be present (such as those elements which can be present in the amount of 0), it would be unclear how these elements would be controlled since they would not be part of the final product. Thus the scope of the claimed product of claim 15 is clearly indefinite.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2 and 8-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohzuku et al "Layered lithium insertion material of $\text{LiNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$ " (Hereafter referred to as Ohzuku).

According to claim 1, if $x=0$, $\alpha=0.5$, $\beta=0.5$, $\gamma=0$, $\delta=0$ and $z=0$, the composition obtained is $\text{LiNi}_{0.5}\text{Mn}_{0.5}\text{O}_2$ and thus the composition of Ohzuku anticipates the claimed composition (as applied to claims 1 and 2). This composition is controlled so as to fix the oxidation states of the metals in the oxide (as applied to claim 15).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113 as applied to claims 8-13).

The composition above is employed in a lithium cell comprising a negative electrode, non-aqueous electrolyte and a positive electrode (as applied to claim 14).

8. Claims 1-4, 6 and 8-15 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0119374 (Yang).

Yang teaches of a lithium positive active material comprising $\text{LiMn}_{0.7}\text{Ni}_{0.25}\text{Co}_{0.025}\text{Al}_{0.025}\text{O}_2$ (paragraph [0038]). Li is 1, and thus $x=0$. Ni is 0.25 and thus within the range of about 0.2 and about 0.6, Mn is 0.7 and thus is present in an amount of about 0.667. Co is 0.025 and thus is present between about 0 and about 0.333. Al is 0.025 and thus is present between about 0 and about 0.2. Neither F, S, Cl nor I are present and thus $z=0$. Thus the composition of Yang anticipates the composition of claims 1, 2, 3, 4 and 6).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed

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product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113 as applied to claims 8-13).

The composition above is employed in a lithium cell comprising a negative electrode, non-aqueous electrolyte and a positive electrode (as applied to claim 14).

This composition is controlled so as to fix the oxidation states of the metals in the oxide (as applied to claim 15).

9. Claim 15 is rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,040,090 (Sunagawa).

Sunagawa discloses a positive electrode material comprising Li, Ni, Mn, Co, M', O₂ wherein the amounts of the various metals in the electrode are controlled so as to fix the oxidation states of Ni, Mn and Co (see examples and Table 1 as applied to claim 15).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Ohzuku or Yang in view of U.S. Patent Application Publication No. 2002/0055042 (Kweon).

The teachings of Ohzuku and Yang have been discussed above and are incorporated herein, independent of one another.

The differences between claims 16-20 and either Ohzuku or Yang is that neither Ohzuku nor Yang teaches of the surface layer on a core material comprised of the composition above.

Kweon discloses coating lithium metal oxide positive active materials with a material such as Al-isopropoxide and thereafter heating the film to form an alumina coating on the active material (paragraphs [0044]-[0046] as applied to claims 16-20).

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The motivation for providing an metal oxide coating on the positive active material is that it improves the cell energy, cycle life and thermal stability of the cell.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of either Ohzuku or Yang by providing an metal oxide coating on the positive active material since it would have improved the cell energy, cycle life and thermal stability of the cell.

With respect to the percent by weight amount of the coating relative to the core (claim 17):

Kweon discloses optimizing the thickness of the coating by controlling the amount of the metal constituent in the coating solution. The metal is present in an amount of less than 20 wt%. In coating the lithium metal oxide particles using a controlled content solution, Kweon teaches that the amount of the shell applied to the core is maintained such that the coating provides a sufficient thickness to coat the entire particle without providing a coating which is too thick. Thus Kweon suggests controlling the amount of the shell to the core and thus suggests to one of ordinary skill in the art that by controlling the shell thickness about the core, the weight of the metal oxide shell is controlled to a minor value relative to the core.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of to maintain the weight of the shell in a range of about 0.05-10 percent by weight relative to the weight of the positive active material since it would have provided a shell which sufficiently coats the positive active material while not being excessively thick. Generally, differences in ranges will

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not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such ranges is critical. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969).

Double Patenting

11. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

12. Claims 1-20 are provisionally rejected on the ground of nonstatutory

obviousness-type double patenting as being unpatentable over claims 1-13 of copending Application No. 10/903514. Although the conflicting claims are not identical, they are not patentably distinct from each other because the positive active material product and product-by-process are identical to at least some of the claimed species, such as the composition of instant claim 6. Thus the core of the claimed invention in

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both applications are not held to be patentably distinct from one another and raise an obviousness-type double patenting rejection between the copending applications.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

13. Claims 1-20 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of copending Application No. 10/800292. Although the conflicting claims are not identical, they are not patentably distinct from each other because the positive active material product and product-by-process are identical to at least some of the claimed species, such as the composition of instant claim 1. Thus the core of the claimed invention in both applications are not held to be patentably distinct from one another and raise an obviousness-type double patenting rejection between the copending applications.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is 571-272-1283. The examiner can normally be reached on Monday to Thursday, 8:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

A handwritten signature in black ink, appearing to read "Gregg Cantelmo".

gc

May 30, 2006

Gregg Cantelmo
Primary Examiner
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